



## Effects Of Hormone Replacement Therapy On Serum Lipid Profile In Postmenopausal Women

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### Abstract

**Introduction:** Menopause, a natural event in a woman's life is characterized by loss of reproductive function and decline in estrogen levels. Menopause is not just the cessation of menstruation; it is an outward manifestation of ovarian failure due to depletion of ovarian follicles that leads to decreased estrogen levels which in turn leads to the morbidity associated with the menopause.

### Objectives:

1. To evaluate serum lipid profile (baseline) of post-menopausal women with menopausal symptoms.
2. To assess the effect of HRT on serum lipid levels .

### Material & Methods:

Effects of hormone replacement therapy (conjugated estrogen 0.625mg and medroxyprogesterone acetate 2.5mg) on serum lipid profile were studied in 150 healthy postmenopausal women in a prospective randomized observational study. Serum lipid levels at baseline, 3rd month and 6th month were analyzed using independent samples' t-test.95% confidence intervals for the difference in means were reported.

### Observations

At 3 months and 6 months, there was a change of 5.3% and 11.0% respectively, from baseline values in total cholesterol levels, there was change of 9.1% and 15.8% in triglyceride levels from baseline values.. There was an increase of 5.9 % and 12.7 % from baseline HDL levels. There was a decrease of 7.9% and 14.0% from baseline LDL levels; 10.1% and 16.6% from baseline VLDL.

**Keywords:** Hormone replacement therapy , postmenopausal women , lipid profile

### Introduction

With improvements in medical treatment and increased focus on preventive health care, average life expectancy has increased. Most women are expected to live one third of their lives in the menopause. Average life expectancy for Indians is 68 years, average age of menopause being 46-51 years<sup>1</sup>. So knowledge about menopause and various problems related to menopause are important.

Menopause refers to a point in time that follows 1 year after the complete cessation of menstruation, and the post-menopause describes years following that point. Menopause, a natural event in a woman's life is characterized by loss of reproductive function and decline in estrogen levels<sup>2</sup>. It is not just the cessation of menstruation; it is an outward manifestation of ovarian failure due to depletion of

ovarian follicles that leads to decreased estrogen levels which in turn leads to the morbidity associated with the menopause. Therefore, a woman who has undergone a hysterectomy but who retains her ovaries will experience normal menopausal symptoms as oocyte depletion leads to hypoestrogenism, even though cessation of menstruation occurred with surgery. Natural menopause occurs at or after 40 years of age and has no underlying pathologic cause. The post-menopause lasts about 10 to 15 years and is followed by senescence from about 65 years of age to end of life. This age limit is marked by the successive occurrence of maximum rate of cardiovascular, orthopedic and oncologic diseases.

**Influential Factors**

Several environmental, genetic, and surgical influences may alter ovarian aging. For example, smoking hastens the age of menopause by approximately 2 years<sup>3,4</sup>. Chemotherapy, pelvic radiations, and ovarian surgery may also lead to earlier menopause. More erratic fluctuations in female reproductive hormones lead to an array of physical and psychological symptoms<sup>5,6</sup>. Diet, exercise, reproductive history, socioeconomic status, body mass index (BMI), mood, climate, and individual or cultural attitudes toward menopause may explain variations in reports of menopausal symptoms<sup>7</sup>.

**Material And Methods**

1. Study design: Prospective observational study.
2. Sample Size:

A total of 75 postmenopausal females were included in the study.

**3. Inclusion Criteria:**

Post-menopausal women who were recently been put on HRT (conjugated estrogen 0.625mg/day and medroxyprogesterone acetate 2.5mg/day).

**4. Exclusion Criteria:**

- a) Dyslipidemia
  - b) Subjects receiving other medications likely to interfere with the drugs under study and with the serum lipid profile.
  - c) Subjects with medical disorders like Diabetes Mellitus, hypertension who likely have deranged lipid profile.
  - d) Subjects who have undergone iatrogenic menopause- hysterectomy with or without bilateral oophorectomy, radiation induced menopause.
  - e) Non-Kashmiri postmenopausal women.
5. All the study related tests were conducted by standard enzymatic method in a fully automatic analyzer in the Biochemistry Laboratory at LD Hospital, Srinagar.
  6. Tests were conducted at 0 day ( baseline) , 3<sup>rd</sup> month and 6<sup>th</sup> month of follow up.

**Observations And Results**

The mean age of patients in this study was 52.1+-7.87 years.

\*Statistically significant difference with respect to baseline (P-value<0.05)

Age	No.	%age
< 50	40	53.3
50-59	19	25.3
≥ 60	16	21.3

Total	75	100
Mean±SD	52.1±7.87	

At 3 months and 6 months, there was a change of 5.3% and 11.0% respectively, from baseline values in total cholesterol levels, which was statistically significant (p-value).

TC (mg/dL)		Mean	SD	Difference	%change	P-value
HRT Group	Baseline	194.4	18.76	-	-	-
	3 months	184.1	13.27	10.2	5.3	<0.001*
	6 months	173.0	15.37	21.4	11.0	<0.001*

At 3 months and 6 months, there was change of 9.1% and 15.8% respectively in triglyceride levels from baseline values, statistically significant difference with p value <0.05).

TG (ml/dL)		Mean	SD	Difference	%change	P-value
HRT	Baseline	120.1	30.48	-	-	-
	3 months	131.0	19.66	-10.9	-9.1	<0.001*
	6 months	139.1	14.81	-19.0	-15.8	<0.001*

There was an increase of 5.9 % and 12.7 % at 3 months and at 6 months respectively from baseline HDL levels. This was statistically significant difference with p-values of 0.028 and 0.001 at 3 and 6 months respectively.

HDL (ml/dL)		Mean	SD	Difference	%change	P-value
HRT Group	Baseline	50.8	9.53	-	-	-
	3 months	53.8	8.24	3.0	5.9	0.028*
	6 months	57.3	8.05	6.4	12.7	<0.001*

There was a decrease of 7.9% and 14.0% at 3 months and at 6 months respectively from baseline LDL levels, a statistically significant difference

LDL (mg/dL)		Mean	SD	Difference	%change	P-value
HRT	Baseline	99.7	18.85	-	-	-
	3 months	91.9	13.23	7.8	7.9	<0.001*
	6 months	85.7	8.49	14.0	14.0	<0.001*

There was a decrease of 10.1% and 16.6% at 3 months and at 6 months respectively, with a statistically significant difference.

Parameter		Mean	SD	Difference	%change	P-value
HRT Group	Baseline	30.8	3.01	-	-	-
	3 months	27.7	3.12	3.1	10.1	<0.001*
	6 months	25.7	2.79	5.1	16.6	<0.001*

20% of patients complained of leg cramps, 13.3% had mastalgia, 16.0% had nausea, 1.3% had an episode of vaginal bleeding, 9.3% had leucorrhoea and while as in raloxifene group 10.7% had leg cramps, 10.7 % complained of mastalgia, 4.0% had nausea, 12.0% complained of abdominal pain, and 21.3% had complained of hot flushes.

**Discussion :**

Women develop cardiovascular disease approximately 7-10 years later than men, but progress with similar risk after menopause. Recent studies suggest that hormone replacement therapy (HRT) is cardioprotective when initiated early after menopause.

In our study , HRT was found favourable in postmenopausal women in improving lipid profile and thereby cardiovascular status. It was found that HRT increased HDL cholesterol and decreased total cholesterol and LDL.

A strong effect of HRT on atherogenic lipids with a large reduction in the pro-thrombotic Lp(a), suggesting an overall favorable effect on thrombogenicity after HRT replacement therapy in post-menopausal women and have been confirmed by large number of studies .(8-14)

In conclusion, our study was designed to be used as baseline for further studies. By using tight control on all environmental factors, populations and proper study disciplines, the result of those studies could lead to good practice of hormone therapy in postmenopausal women. This could help to use hormone therapy with safety and may prevent risks of cardiovascular disease as well as the risk of death from other disease in menopausal women.

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